

REMARKS

The concurrently filed Request for Continued Examination (RCE) Transmittal for the above-identified application is noted. This RCE Transmittal sets forth that the amendments in the Amendment After Final Rejection filed February 3, 2004, are not to be entered/considered in the above-identified application. Accordingly, the present amendments and present remarks constitute the Submission required under 37 CFR § 1.114 for the concurrently filed RCE Transmittal. Withdrawal of the Finality of the Office Action mailed November 18, 2003, and entry of the present amendments, are clearly proper in light of the concurrently filed RCE Transmittal and present Submission.

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have cancelled previously considered claim 1 without prejudice or disclaimer, substituting new claim 27 therefor. Claim 27 incorporates the subject matter of previously considered claims 6 and 8 into previously considered claim 1; and also recites that while the one end of the laminated material is fixed on the at least one first base, the other end of the first surface plate is moved and bent toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate. Note, for example, Fig. 2 of Applicants' original disclosure, particularly together with the description on pages 9 and 10 of Applicants' specification in connection with this drawing figure. In light of new claim 27, claims 1, 6 and 8 have been cancelled without prejudice or disclaimer; moreover, claims 2 and 7 have also been cancelled without prejudice or disclaimer.

In addition, in light of new claim 27, dependency of claim 9 has been amended.

Each of claims 11-14 has been amended to incorporate therein amendments thereto in the Amendment After Final Rejection filed February 3, 2004, and to recite that while one end of a first end of a first surface plate of a laminated material, having a first surface plate and a second surface plate respectively "adhered" to both sides of a core material, "is fixed" on a base, the other end of the first surface plate is moved and bent into an arc-shape, thereby separating the first surface plate at the other end from the core material and the second surface plate. Each of claims 11-14 has been further amended to recite that while the one end of the core material and a second surface plate adhered to the core material "is adhered" to the one end of the first surface plate, the other end of the core material and the second surface plate is moved and bent. Claim 11 has been further amended to recite that the adhesive is applied after moving the other end of the first surface plate and bending it into an arc-shape.

In addition to claim 27, Applicants are adding new claims 28-31 to the application. Claims 28 and 29, dependent respectively on claims 27 and 28, respectively recites that in the laminated material, adhesive is provided on the whole surface of the second surface plate contacting the core material, and adhesive is provided on the surface of the one end of the first surface plate contacting the core material and not on other parts of the surface of the first surface plate contacting the core material; and recites that these other parts of the surface of the first surface plate contacting the core material, for which adhesive is not provided, includes an area of the surface of the first surface plate which is bent when performing the

moving and bending the other end of the first surface plate.

New claim 30 is an independent claim, defining a method of bending a laminated material. Claim 30 recites subject matter set forth in previously considered claim 1, as amended in the Amendment After Final Rejection filed February 3, 2004; incorporates the subject matter of claim 9; and recites that while one end of a laminated material, having the first and second surface plates respectively adhered to both sides of a core material, is fixed on at least one first base, the other end of the first surface plate is moved and bent toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate. In view of new claim 30, claim 10, including dependency thereof, has been amended. Claim 31, dependent on claim 30, recites further steps, prior to the moving and bending of the other end of the first surface plate, of mounting the laminated material to at least one first base positioned along the horizontal direction, and thereafter fixing the one end of the laminated material to the at least one first base. In connection with claim 31, note, for example, prior claim 6.

The contention by the Examiner in the Advisory Action mailed March 9, 2004, that the addition of the new language to claim 1 in the Amendment After Final Rejection filed February 3, 2004, without canceling claims 2 and 7, raises new issues, is noted. By the present Amendment, claims 2 and 7 have been cancelled without prejudice or disclaimer; accordingly, any possible issue due to claims 2 and 7 remaining in the application is moot.

The rejection of claims 5 and 8 under the second paragraph of 35 USC §112,

as being indefinite, set forth in Item 2 on page 2 of the Final rejection in the Office Action mailed November 18, 2003, is noted. In view of the canceling of claims 5 and 8, it is respectfully submitted that this rejection is moot.

In any event, turning to presently submitted claim 27, note that this claim recites that the bending of the first surface plate is performed by sucking the other end of the first surface plate by "an arc-shaped second base" positioned at the other end of the first surface plate, and, after fixing the other end of the first surface plate to the second base, rotating the second base on the other end of the first surface plate. It is respectfully submitted that claim 27 is clear as to the relationship between the second base and the first surface plate, with respect to movement of the other end of the first surface plate, particularly in light of the description in Applicants' specification. In connection with previously considered claim 8, note that claim 27 recites at least one first base and "an arc-shaped" second base, thereby clearly referring to the various bases.

The objection to claim 12 set forth in Item 3 on page 2 of the Office Action mailed November 18, 2003, is moot, in view of amendments to claim 12 (in this regard, note corresponding amendments to claims 11, 13 and 14).

Applicants respectfully submit that all of the claims now presented for consideration by the Examiner patentably distinguish over the teachings of the prior art applied by the Examiner in rejecting claims in the Final rejection in the Office Action mailed November 18, 2003, that is, the teachings of the U.S. patents to Palfey, et al., No. 4,078,959, and to Banks, et al., No. 6,036,802, under the provisions of 35 USC §103.

It is respectfully submitted that the teachings of these references as applied by the Examiner would have neither taught nor would have suggested such a method of bending a laminated material as in the present claims, including, while the one end of the laminated material having a first surface plate and a second surface plate respectively adhered to both sides of a core material is fixed on a base, the other end of the first surface plate is moved and bent toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate, with the other end of the core material and the second surface plate being bent and the other end of the core material being adhered to the first surface plate. See claim 27, and note also claim 30. See, further, claims 11-14.

Furthermore, it is respectfully submitted that the teachings of these applied references would have neither disclosed nor would have suggested such a method as in the present claims, including wherein the method further includes mounting the laminated material to at least one first base positioned along the horizontal direction, and thereafter fixing the one end of the laminated material to this at least one first base; and wherein the bending of the first surface plate is performed by sucking the other end of the first surface plate by an arc-shaped second base positioned at the other end of the first surface plate, and, after fixing the other end of the first surface plate to the second base, rotating the second base on the other end of the first surface plate so that the other end of the first surface plate is moved toward the direction separating from the core material. See claim 27. In connection with the steps of mounting the laminated material and thereafter fixing the one end of the

laminated material to the at least one first base, note also claim 31.

Moreover, it is respectfully submitted that these references would have neither disclosed nor would have suggested such a method of bending a laminated material as in the present claims, including the application of an adhesive to one of the contact surfaces between the first surface plate and the core material at the other end of the first surface plate, with moving the other end of the first surface plate and bending it into an arc-shape. See claim 11. Note also, for example, claim 27, reciting that the adhesive is applied by spraying to either one of the contact surfaces between the first surface plate and the core material at the other end of the first surface plate.

In addition, it is respectfully submitted that these references would have neither taught nor would have suggested such a method of bending a laminated material as in the present claims, having features as discussed previously in connection with claims 1, 11-14 and 30, and, moreover, wherein in moving and bending the other end of the core material and the second surface plate along the first surface plate being bent, the first surface plate side portion of the core material is crushed in the direction of the bend. See claims 13 and 14.

Furthermore, it is respectfully submitted that the teachings of the applied prior art would have neither disclosed nor would have suggested the other aspects of the present invention as recited in the dependent claims, having features as discussed previously, and further including (but not limited to) wherein the one end of the first surface plate is fixed to the at least one first base during the bending of the first surface plate by pressing the laminated material onto the at least one first base by

the roller (see claim 10); and/or wherein the adhesive is provided between the second surface plate and the core material, and/or between the first surface plate and the core material, as in claims 28 and 29.

The present invention is directed to a method of bending a laminated material, which can be utilized to provide a laminated material having a relatively large thickness and having a curved surface with small radius.

Various techniques for forming a small bend radius have previously been proposed, as described on pages 1 and 2 of Applicants' specification. However, these techniques are deficient in providing a curved laminate with appropriate bending, by a simplified process. According to the present invention, a bent laminate can easily be manufactured, with the character of the curve depending on how the first surface plate is bent, since the remainder of the laminated material is bent to match the bend that is put into the first surface plate.

Palley, et al. discloses a method for the preparation of a foamed cored sandwich panel having a curved portion therein, the steps including affixing a first or inner facing sheet to a flexibilized foam plastic core; affixing a second or exterior facing sheet to the foam plastic core in a region where it is not desired to bend the resultant panel; bending the core and first facing sheet to a desired configuration wherein the first facing sheet is disposed on the concave side of the bend; and adhering any unadhered portion of the second facing sheet to the core in the bent region of the laminated panel. See column 1, lines 45-57. Note also column 2, lines 4-8, describing suitable skin or facing sheets for the panel.

It is emphasized that this patent discloses a method wherein, initially, both the

first or inner facing sheet and the flexibilized foam plastic core are bent, the second facing sheet thereafter being bent. It is respectfully submitted that the disclosure in Palfey, et al. would have neither taught nor would have suggested the presently claimed subject matter, including wherein the other end of the first surface plate is moved and bent toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate.

As can be appreciated, by initially bending only the first surface plate, an accurate and precise bending thereof can be achieved, with the core and second surface plate layer being bent to follow the curve of the first surface plate. It is respectfully submitted that the disclosure of Palfey, et al., wherein both a surface sheet and the flexibilized foam plastic core are initially bent, would have neither disclosed nor would have suggested the presently claimed subject matter wherein the first surface plate is moved and bent to thereby separate the first surface plate at the other end from the core material and the second surface plate, or advantages thereof in providing a precise curved plate due to, for example, only bending such plate at the first instance.

The contention by the Examiner in the second paragraph on page 2 of the Advisory Action mailed March 9, 2004, that one reading Palfey, et al. "as a whole" would appreciate that the same result would be achieved in Palfey, et al. independent of whether the core was bent with the first and second plate since the purpose is to prevent rupture of the core, is respectfully traversed. Clearly, Palfey, et al. only discloses initial bending of the first facing sheet together with the

core. It is respectfully submitted that only through hindsight use of Applicants' original disclosure, which, of course, is improper under 35 USC §103, would one "appreciate" the results achieved according to the present invention. It is respectfully submitted that the Examiner has improperly ignored the teachings of Palfey, et al., as a whole, in concluding that one of ordinary skill in the art would appreciate that the core could be bent with the first or second plate, particularly since Palfey, et al. specifically and expressly discloses, in the broadest teaching therein, of affixing the first or inner facing sheet to the flexibilized foam plastic core and thereafter bending the core and first facing sheet to a desired configuration.

In addition, it is respectfully submitted that the Examiner has improperly ignored advantages achieved by the present invention, due to increased precision in the bend of the first surface plate, when bending the first plate alone.

It is respectfully submitted that the teachings of Banks, et al., would not have rectified the deficiencies of Palfey, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Banks, et al. discloses a process for bending a thermoplastic skinned honeycomb core panel, as well as apparatus therefor. According to the described procedure in Banks, et al., a planar portion of the panel is clamped and held against movement parallel to the plane of the planar portion. A linear band of an inside face sheet is heated on one side of the panel with a heater bar to soften resin in the inside face sheet and disbond adhesive holding the inside face sheet to the honeycomb core. The linear band is formed into a bubble separated away from the honeycomb core by lifting the heater bar away from the panel and pulling the inside

face sheet away from the core, and a distal leg of the panel outward of the clamped portion is bent around a heated anvil along an axis parallel to the linear band to form a bend, with the bubble coinciding with the inside of the bend. The bubble is collapsed around the inside radius and formed into an overlapping flap of inside face sheet, with the overlapping flap of the inside face sheet being pressed in a fold between the anvil and the bent leg of the panel, the leg being held in a bent position while resin in the flap freezes or solidifies in the fold. See column 1, lines 45-63.

It is respectfully submitted that Banks, et al. discloses a technique solely for thermoplastic panel bending, and includes a complicated technique wherein initially total bonding is provided and selective portions of the panel are disbonded. This patent requires a bubble being formed of the face plate around which the panel is formed. Emphasizing that in Banks, et al. a completely bonded panel is initially provided, it is respectfully submitted that one of ordinary skill in the art concerned with in Palfey, et al. would not have looked to the teachings of Banks, et al.

In any event, again emphasizing the complete bonding between the respective face sheet materials and core material in Banks, et al., it is respectfully submitted that the teachings of Palfey, et al., even in combination with the teachings of Banks, et al., would have neither taught nor would have suggested the present invention, including, inter alia, the moving and bending of the other end of the first surface plate toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate.

The contention by the Examiner on page 3 of the Advisory Action mailed

March 9, 2004, that Palfey, et al. teaches that to form a curve, a portion is bent and the remainder is attached thereto; and that the portion that is bent is bent to the desired final shape regardless of whether the core is attached to it during that bending, is noted. It is respectfully submitted, however, that the Examiner errs in the conclusion that whether or not the core is attached to the portion that is initially bent, is not relevant. As can be appreciated, with the core material attached to the first surface plate the core material of course could have an effect on the bending of the first surface plate. This is avoided according to the present invention, wherein the other end of the first surface plate is moved and bent toward the direction separating from the core material, thereby separating the first surface plate at the other end from the core material and the second surface plate.

Contentions by the Examiner in connection with dependent claims are respectfully traversed. Since the teachings of the applied references do not disclose, nor would have suggested, the method set forth in the independent claims, it is respectfully submitted that the teachings of the applied references do not disclose, nor would have suggested the process set forth in the dependent claims.

In addition, note that in connection with the discussion of the references in the Final rejection in the Office Action mailed November 18, 2003, the Examiner does not even refer to the subject matter of claim 6. Clearly the combined teachings of the references would have neither disclosed nor would have suggested such feature of the present invention. Note, in particular, claims 27 and 31, and claims dependent thereon.

In connection with the rejection set forth in Item 6 on pages 5-7 of the Office

Action mailed November 18, 2003, wherein Banks, et al. is used as a primary reference, note that the teachings of the applied references have been previously discussed. Even using Banks, et al. as the primary reference, this reference having whole surfaces of the contact area between the facing sheets and the core material being provided with adhesive, with disbonding later taking place and with the formation of a bubble at the bending portion, the teachings of this reference, even together with the teachings of Palfey, et al., would have neither taught nor would have suggested the presently claimed subject matter, including, inter alia, wherein the other end of the first plate is moved and bent toward the direction separating from the core material while one end of the laminated material is fixed on the at least one first base, thereby separating the first surface plate at the other end from the core material and the second surface plate and advantages thereof as discussed previously; and would have neither taught nor would have suggested the other features of the present invention as discussed previously.

In view of the foregoing comments and amendments, granting of the RCE and entry of the present amendments, and reconsideration and allowance of all claims presently in the application, are respectfully requested.

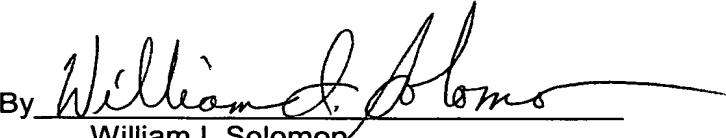
To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus,

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Respectfully submitted,

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